



Unmounted Chip Carrier Operating Instructions

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Using Unmounted Cantilever Chips

ThermoMicroscopes's Unmounted Chip Carrier allows you to use unmounted cantilever chips in your AutoProbe CP, LS, or M5 system. Unmounted cantilever chips are individual chips that are not premounted on cantilever cassettes. ThermoMicroscopes supplies unmounted cantilever chips in several forms: as a strip of chips, as a half-wafer of chips, or as a full-wafer of chips.

In order to use unmounted cantilever chips in your system, you must first separate an individual cantilever chip from the strip, half-wafer, or full-wafer. Then you must insert the cantilever chip in the chip carrier, which in turn is inserted on your SPM cartridge (either an AFM/LFM, NC-AFM, or liquid cell cartridge). Lastly, you install the cartridge in the probe head of your AutoProbe system just as you normally would do.

The chip carrier holds either a ThermoMicroscopes Microlever chip, or a ThermoMicroscopes Ultralever chip. A Microlever chip and an Ultralever chip are shown in figure 1, below. When you use unmounted cantilever chips, you will need to realign the deflection sensor more frequently than when you use premounted, prealigned cantilever cassettes.

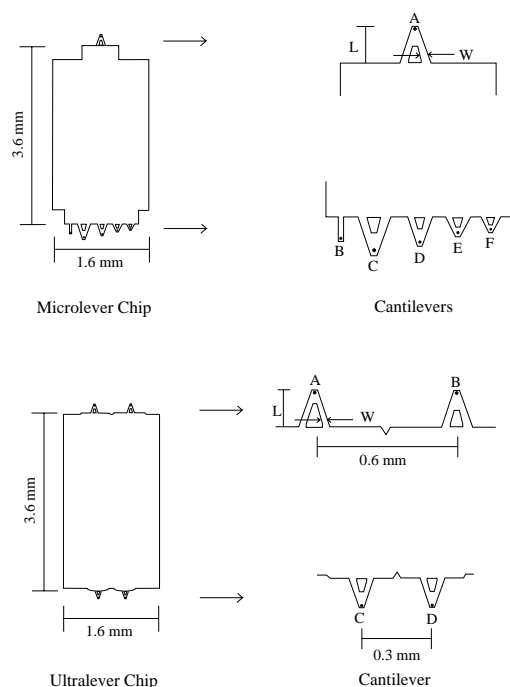


Figure 1. Microlever and Ultralever chips.

Note: See your cantilever data sheet for the parameters associated with your Microlevers or Ultralevers.

About the Chip Carrier

The following parts are supplied with your chip carrier:

- ◆ a chip carrier
- ◆ a mounting fixture for the chip carrier

The chip carrier is a small, nickel-plated aluminum piece that includes a spring clip to hold the cantilever chip. The cantilever chip sits in a slot underneath the spring clip.

The mounting fixture is an aluminum block (about 2½" x 2½") which supports the chip carrier while you insert a chip under the spring clip. These components are shown in Figure 2, below.

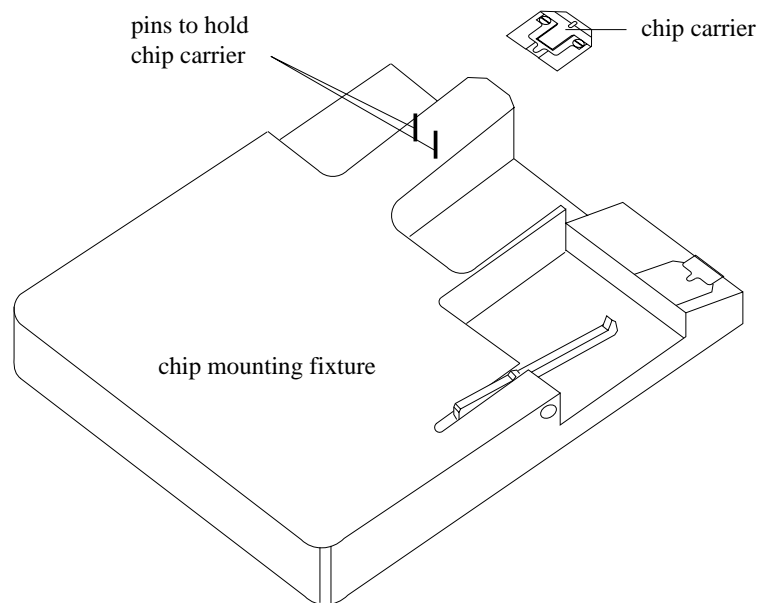


Figure 2. The chip carrier and the mounting fixture.

Installing a Cantilever Chip in the Carrier

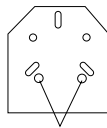
To install an individual cantilever chip in the carrier, follow these steps:

1. To separate an individual cantilever chip, follow the instructions that accompany your strip of 15 chips, or your half-wafer or full-wafer .
2. Using a pair of tweezers, place the separated cantilever chip on the top surface of the chip mounting fixture.

CAUTION

Make sure that the side with the cantilevers faces up and that nothing touches the cantilever tips.

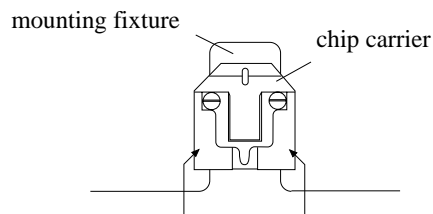
3. Position the chip carrier on the mounting fixture by fitting the two holes in the carrier over the two pins on the mounting fixture. The location of the two holes is shown in the Figure 3, below. The spring clip should be facing up.



Two holes for the mounting pins

Figure 3. The underside of the chip carrier.

4. Use your thumb and forefinger to press down on the left and right sides of the carrier, on either side of the spring clip, as shown in the Figure 4, below. Pushing down on the carrier forces the two pins in the mounting fixture through the holes in the carrier, thereby opening the spring clip.



Press down on the chip carrier to open the spring clip.

Figure 4. The chip carrier on the mounting fixture.

5. While pressing down on the chip carrier, use tweezers to grasp the sides of the chip, as shown in Figure 5, below. Slide the chip under the open spring clip so that it sits in the slot at the end of the carrier. Slide the chip in until it hits the back edge of the slot.

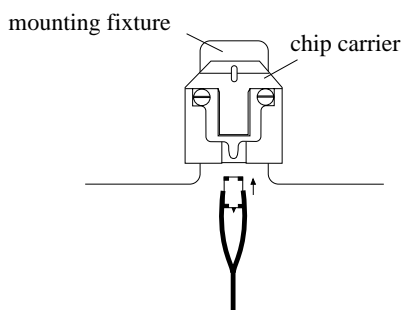


Figure 5. Mounting a chip onto the chip carrier.

6. Before closing the spring clip, adjust the position of the chip so that it lines up against either the left or right edge of the slot (as you face the open spring clip).
 - ◆ If you are using ThermoMicroscopes's Microlever chip, the chip should line up against the *left* edge of the slot.
 - ◆ If you are using Psi's Ultralever chip, the chip should line up against the *right* edge of the slot.

Note: If the chip doesn't line up with the edges of the slot, it will be more difficult to align the laser beam at the end of the cantilever.

These two chip positions are illustrated in Figure 6, below.

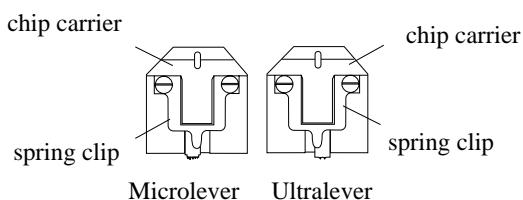


Figure 6. Top view of chip carrier, shown with Microlever (left) and Ultralever (right) chips mounted.

7. Close the spring clip, and then lift the chip carrier off the mounting fixture by holding the edges of the carrier.

CAUTION

Be careful not to touch the cantilever chip with your fingers.

8. Install the chip carrier onto your SPM cartridge the same way you install a cantilever cassette. Three slots in the carrier oriented at 120° to each other line up with the three balls on the cartridge.

If you are unfamiliar with the procedure for installing a cantilever cassette, refer to your *User's Guide to AutoProbe* for detailed instructions.

You are now ready to install the SPM cartridge in the probe head. After you install the SPM cartridge, you will need to realign the deflection sensor in the probe head to steer the laser beam onto the end of the cantilever. Refer to your *User's Guide to AutoProbe* to learn how to align the deflection sensor.

